

**REMARKS**

The applicants note with appreciation the acknowledgement of the claim for priority under section 119 and the notice that all of the certified copies of the priority documents have been received.

The applicants acknowledge receiving of a copy of form PTO-1449, on which the examiner has initialed the sole listed item.

Claims 1-21 are pending. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claims 2-7, 10, 11, 15 and 21 have been amended to correct minor and grammatical errors. No new matter has been added.

**Drawings**

Two substitute sheets of drawings are attached. In Fig. 4, the word "ration" has been changed to "ratio" to correct a spelling error. In Fig. 9, two instances of the word "tree-way" were changed to "three-way" to correct spelling errors. No other changes have been made to the figures and no new matter has been added.

**§102 rejection**

Claims 1-8, 11, 12 and 16 were rejected under 35 USC 102(b) as being anticipated by the patent to Takeuchi *et al.* (U.S. Patent No. 4,774,217). Claim 1 recites, among other things, the following:

"A ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst component supported by the ceramic carrier. . ."

That is, the catalyst body of the present invention directly supports the catalyst component and does not include a coating layer for bonding the catalyst component to the carrier. The patent to Takeuchi *et al.* discloses a catalytic structure in which a coating layer is formed on a base ceramic surface, and a catalyst component is loaded onto the coating layer. See col. 3, lines 15-24. Thus, the patent to Takeuchi *et al.* fails to disclose the claimed catalyst body.

Further, claim 1 recites, among other things, the following:

"...wherein the quantity of catalyst supported by a unit volume of the carrier at the middle portion thereof where the gas stream is maximum is set to 1.1 times that of the periphery or larger."

Although the patent to Takeuchi *et al.* shows a catalytic structure where the distribution of the catalyst is not uniform, the catalytic structure of Takeuchi *et al.* does not have a quantity of catalyst by unit volume of the carrier that is 1.1 times or more as much at the middle than at the periphery. Note that the patent to Takeuchi *et al.* shows the density of the catalyst to be greater at the downstream end of the structure. See col. 6, lines 53-56. Therefore, the applicants respectfully request that the rejection of claim 1 based on section 102 be withdrawn.

§103 rejection

Claims 1-21 were rejected under 35 USC 103(a) as being unpatentable over the patent to Takeuchi *et al.* (U.S. Patent No. 4,774,217) in view of the patent to Patchett *et al.* (U.S. Patent No. 5,820,693), Dettling *et al.* (U.S. Patent No. 4,335,023), Beauseigneur *et al.* (U.S. 5,334,570) and Uchikawa *et al.* (U.S. Patent No. 5,006,221).

However, all the independent claims recite at least a ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst *directly* on the surface of a substrate ceramic.

That is, the catalyst body of the present invention is capable of directly supporting the catalyst component and does not include a coating layer for bonding the catalyst component to the carrier. None of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests such a catalyst body.

The patent to Takeuchi *et al.* discloses a catalytic structure in which a coating layer is formed on a base ceramic surface, and a catalyst component is loaded onto the coating layer. See col. 3, lines 15-24. Thus, the patent to Takeuchi *et al.* fails to disclose or suggest the claimed catalyst body.

The patent to Patchett *et al.* relates to a method of removing a coating from a carrier. However, there is no disclosure or suggestion that a catalyst component is directly supported by the carrier, as claimed.

The patent to Dettling *et al.* discloses a catalytic structure in which a coating layer is formed on a ceramic structure, and a catalyst structure is loaded onto the coating layer. See col.

7, lines 8-41. Thus, there is no disclosure or suggestion that a catalyst component is directly supported by the carrier, as claimed.

The patent to Beauseigneur *et al.* discloses colloidal particles, which are to be applied to a ceramic substrate. The colloidal particles are bonded to a metal catalyst. The colloidal particles of the Beauseigneur patent are not catalyst particles, since the colloidal particles are essentially oxide particles in which a catalyst is dispersed. The colloidal particles of the Beauseigneur patent are part of a washcoat layer for increasing the surface area of the support. Therefore, the catalyst is not loaded "directly" onto a base ceramic surface, as claimed in claim 1.

The patent to Uchikawa *et al.* relates to a gas sensor and belongs to a different technical field from catalyst bodies. The patent to Uchikawa *et al.* fails to disclose or suggest that a catalyst component is directly supported by the carrier, as claimed.

In addition, with regard to claim 1 and its dependents, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a catalyst body in which the quantity of catalyst supported by a unit volume of the carrier at the middle portion thereof, where the gas stream is maximum, is set to 1.1 times that of the periphery or larger. Therefore, the rejection of claim 1 and its dependents based on section 103 should be withdrawn.

With regard to claims 2 and 3, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a carrier in which the surface area per unit volume of the carrier at the middle portion thereof where the gas stream velocity is highest is 1.1 or more times greater than that of the periphery. Therefore, the rejection of claims 2 and 3 based on section 103 should be withdrawn.

With regard to claim 5, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a catalyst body in which 50% by weight or more of the entire catalyst is concentrated in a region from the upstream end of the carrier to a point one quarter to one third of the entire length. Therefore, the rejection of claim 5 based on section 103 should be withdrawn.

With regard to claims 6 and 7, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a carrier in which a catalyst having high heat resistance is located in the upstream end of the carrier, and a catalyst

having low heat resistance is located in the downstream end of the carrier, as claimed. Therefore, the rejection of claims 6 and 7 based on section 103 should be withdrawn.

With regard to claims 9, 10 and 12, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a catalyst body in which the catalyst comprises particles are shaped such that each has a larger surface area than a spherical or semi-spherical particle of the same weight. Therefore, the rejection of claims 9, 10 and 12 based on section 103 should be withdrawn.

With regard to claim 11, none of the patents to Takeuchi *et al.*, Patchett *et al.*, Dettling *et al.*, Beauseigneur *et al.*, or Uchikawa *et al.* discloses or suggests a catalyst body in which the catalyst is oriented in a plane of high catalyst activity. Therefore, the rejection of claim 11 based on section 103 should be withdrawn.

Obviousness-type double patenting rejection

Claims 1-21 were provisionally rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of co-pending application 10/202,826 to Tanaka *et al.* However, the claims of the present application are patentably distinct from those of application 10/202,826. The claims of application 10/202,826 require that the catalyst be made of a compound containing no chlorine. The claims of the present application include no similar limitations. Some of the claims of the present application call for a ceramic catalyst body in which the catalyst is not uniformly distributed, others of the claims call for non-uniformity of the heat resistance of the catalyst, others of the claims call for non-uniformity in the surface area of the carrier, others of the claims call for non-uniformity in the surface area of the catalyst particles, and at least one of the present claims calls for orienting the catalyst in a plane that has high catalyst activity; there are no similar limitations in the claims of application 10/202,826. The office action fails to set forth why the claims of the present application are obvious variations of those in application 10/202,826. The claims of the present application are not obvious variations of those in application 10/202,826, and the double patenting rejection should be withdrawn.

Claims 1-21 were provisionally rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of co-pending application 09/961,203 to Nakanishi *et al.* However, the claims of application 09/961,203 require a ceramic with metal

elements having NO<sub>x</sub> absorbent capacity. No similar limitation appears in the claims of the present application. Some of the claims of the present application call for a ceramic catalyst body in which the catalyst is not uniformly distributed, others of the claims call for non-uniformity of the heat resistance of the catalyst, others of the claims call for non-uniformity in the surface area of the carrier, others of the claims call for non-uniformity in the surface area of the catalyst particles, and at least one of the present claims calls for orienting the catalyst in a plane that has high catalyst activity; there are here are no similar limitations in the claims of application 09/961,203. Further, the office action fails to indicate why the claims of the present application are obvious variations of the claims of application 09/961,203. The claims of the present application are not an obvious variation of the claims in application 09/961,203 and are patentably distinct from those claims, and the double patenting rejection should be withdrawn.

Claims 1-21 were provisionally rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-41 of co-pending application 09/966,723 to Koiki *et al.* However, the claims of application 09/966,723 require a multitude of cells, which are substantially parallel to each other, with the inside thereof serving as a gas flow passage. The claims of the present application contain no similar limitation. Some of the claims of the present application call for a ceramic catalyst body in which the catalyst is not uniformly distributed, others of the claims call for non-uniformity of the heat resistance of the catalyst, others of the claims call for non-uniformity in the surface area of the carrier, others of the claims call for non-uniformity in the surface area of the catalyst particles, and at least one of the present claims calls for orienting the catalyst in a plane that has high catalyst activity; there is no similar limitation in the claims of application 09/966,723. The office action fails to set forth why the claims of the present application are an obvious variation of those in application 09/966,723. The claims of the present application are not obvious variations of and are patentably distinct from those in application 09/966,723, and the double patenting rejection should be withdrawn.


Claims 1-21 were provisionally rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-41 of co-pending application 09/960,498 to Tanaka *et al.* However, at least claims 1 and 17 of application 09/960,498 require an anti-evaporation metal layer on the catalyst particles. Other independent claims of application 09/960,498 require a trap layer upstream of the gas to be purified. No such metal layer or trap layer is described or suggested in the claims of the present application. Some of the claims of

the present application call for a ceramic catalyst body in which the catalyst is not uniformly distributed, others of the claims call for non-uniformity of the heat resistance of the catalyst, others of the claims call for non-uniformity in the surface area of the carrier, others of the claims call for non-uniformity in the surface area of the catalyst particles, and at least one of the present claims calls for orienting the catalyst in a plane that has high catalyst activity; there are no similar claims in application 09/960,498. The office action fails to state why the claims of this application are an obvious variation of the claims in application 09/960,498. The claims of this application are not an obvious variation of the claims in application 09/960,498 and are patentably distinct from those claims, and the double patenting rejection should be withdrawn.

In view of the forgoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,

  
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